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Report of the Secretary

The Eighth Annual Meeting of the Southern Society for Philosophy and Psychology was held at the Johns Hopkins University, Baltimore, on Tuesday and Wednesday, April 8 and 9, 1913. Three sessions were held: one on Tuesday afternoon, one on Tuesday evening, and one on Wednesday forenoon. On Tuesday afternoon at 5 o'clock the members of the Society were invited to attend the University lectures on Bergson's Doctrine of Time given by Professor A. O. Lovejoy in the Donovan Room of McCoy Hall. The sessions were held in the lecture room of the biological laboratory, President R. M. Ogden, presiding. The President's address, entitled The Relation of Psychology to Philosophy and Education, was given at the session on Tuesday evening. Preceding this address, the local members of the Society entertained the visiting members at a dinner at the Johns Hopkins Club, and after the address they entertained them at a smoker in the rooms of Professor Lovejoy. The following items were passed upon at the business meeting, which was held on Wednesday morning.

1. It was decided to hold the next meeting at Atlanta, Georgia, during the recess of the Christmas holidays, in conjunction with the meetings of the American Association for the Advancement of Science.

2. The following officers were elected for the year 1913. President, H. J. Pearce, Brenau College; Vice-President, A. O. Lovejoy, Johns Hopkins University; Secretary-Treasurer, W. C. Ruediger,

The George Washington University; Council for three years, Bird T. Baldwin, Swarthmore College and Josiah Morse, University of South Carolina.

3. The following were elected to membership. Professor W. H. Chase, University of North Carolina; Professor L. R. Geissler, University of Georgia; Miss H. B. Hubberd, Baltimore; Miss E. D. Keller, Baltimore; Dr. Frank A. Manny, Baltimore Training School; Professor Mark A. May, Murphy College; Father Thomas V. Moore, Catholic University of America; Mrs. Jacob Taubenhaus, Newark, Delaware; Mr. Jacob Ulrich, Baltimore; Professor H. H. Williams, University of North Carolina.

4. The accounts of the treasurer were audited by a committee of the Council and showed a balance on hand, April 9, 1913, of $68.70.

5. Votes of thanks were extended to the authorities of the Johns Hopkins University for the use of the lecture room of the biological laboratory and to the local members for the dinner and the smoker.

W. C. RUEDIGER, *Secretary-Treasurer*
THE GEORGE WASHINGTON UNIVERSITY,
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ABSTRACTS OF PAPERS

The complete text of Professor Ogden's presidential address and Professor Watson's paper on "Image and Affection in Behavior" may be found in the May, 1913, number of the PSYCHOLOGICAL REVIEW. Informal reports were given by H. M. Johnson on visual acuity and brightness difference as affected by brightness of surroundings; by J. P. Porter on work in progress at Clark University, and by W. C. Ruediger on retinal rivalry. The symposium on "The Self and the Ego," was participated in by Professors Dunlap, Lovejoy, and Ruediger.

The Relation of Psychology to Philosophy and Education. President's Address. R. M. OGDEN, University of Tennessee.

The theme of this address consists in a plea for a closer sympathetic relationship between psychology and philosophy, and a more exact study of psychological principles as a basis for educational science. It is pointed out that the practical divorce of psychology and philosophy in our universities has operated to the disadvantage of each. It is maintained that psychology is an essential propaedeutic to philosophy, and that in realizing this, the psychologist should

shape his introductory course and, in a measure, his experimental problems more in the direction of philosophical aims and needs. With regard to education, there is a tendency for the educator to base his work upon inadequate principles. It is the business of the psychologist to check this tendency by engaging himself more earnestly in an endeavor to establish principles which may be truly basic for educational science.

A promising field of investigation which bears upon the needs of both philosophy and education is recognized in the newer psychology of thought. Two special problems are then discussed. The first refers to the unwarranted procedure of the new realism in denying the efficacy of psychology and its epistemological data as an adequate foundation for metaphysics. The second considers the nature of the learning-process, as indicated in the work on animal behavior. It is maintained that the conception of the *determining tendency* is a more adequate explanation for acquired behavior, than is the assumption that "feelings of satisfaction and dissatisfaction" are the efficient agencies of the learning-process.

The Essence of Mental Healing: False and True Psychotherapy. Tom A. Williams, Washington, D. C.

The widespread psychotherapy of the populace begins and ends in suggestion, *i. e.*, the domination of a person by a notion or formula imposed by some one else. It is making a puppet. There is no guarantee as to who may not pull the strings. It makes one the creature of another.

Scientific psychotherapy makes a character, a personality, by education, self-knowledge, self-reverence, self-control, one after the other. It is not a magic. The physician is only the starter and supervisor. The work must be done by the patient's patience as well as by the doctor's insight.

The field for pernicious psychotherapy is vast: for it grows where reverence replaces reason; for what one does not understand one stands in awe of and is easily impressed by; as the sailor who fears no real danger is in terror of an omen.

Metaphysics and supernature, to the average man, are beyond criticism. So most attempts at suggestion are disguised in religious and occultist cloak; and possession by spirits or negation of the world settle all difficulties by their powerful suggestion.

To those prejudiced against metaphysics, the guise adopted by suggestion is an undemonstrated physical agent, such as psychic

force, or one which is supposed to have mysterious qualities such as radium, electricity, or a particular manipulation of the spinal nerves. Even in our day when science has replaced speculation even in psychology, spiritual possession still parades as a subconscious or second self.

The latest form of this doctrine, which the popular medical mind is swallowing as it once did the ideas of Messmer, is the theory of the complex, by which is meant a buried though festering idea of a past painful experience.

By this sciolistic conception the doctrine of the dual nature of man still seeks place in science, and its advocates try to guide practical life.

A Psycho-Educational Study of the Fourth and Fifth School Grades.

BIRD T. BALDWIN, Swarthmore College.

For purposes of psycho-educational analysis it should be recognized that every child has five interrelated ages: a *chronological age* in years, months and days, denotive of the temporal span of life; a *mental age* denotive of the ripening of certain instincts, capacities and mental traits; a *physiological age* denotive of stages of physical maturity and growth; a *school standing age* denotive of the rate and position in school progress; and a *moral or religious age* denotive of fairly well-defined nodes of development in moral judgment and religious awakening. These ages may or may not correspond in their stages of development.

It is the aim of this paper, which is a very brief report of a section of a larger investigation, to inquire into the interrelations of the chronological age, the school standing age and the physiological age of normal children. The fundamental questions are: How do children progress through the elementary school? How do children grow and mature physiologically during their elementary school life? What is the relation between these two aspects of development when both are studied consecutively throughout the elementary school?

It must be recognized that since we are investigating the *school standing age* and since promotions are based on marks, these records must be taken at their face value, because they represent school practice and because they offer tangible criteria of the efficiency of the individuals and of the school. The progress through the elementary school of the twenty-five boys and the twenty-nine girls followed in this report is based on 10,579 final quarterly term marks.

Some of the main facts are: Girls maintain a higher school

standing than boys; there are also more repeaters among the boys and fewer cases of "skipping" a grade. In the fourth and fifth grades the boys and girls of the group are approximately the same age but in the last year of high school the boys are older on the average. Pupils who are relatively poor in the first few grades are relatively poor in the upper grades; that is, poor marks in the early school course are indicative of low standing throughout the school course. Boys and girls of normal school age or younger maintain a better school standing both as to grades and marks than those over age for grade. The age of entrance after six or seven years determined the age for completing the work of the elementary school. With very few exceptions these children progress through the elementary school at the rate of one grade per year, regardless of the chronological age at entrance. A more careful study of individul marks reveals that there are waves or nodes in the marks from year to year for each individual, the most prominent drops coming at the entrance to the high school and in the fourth and fifth grades. The subjects in which the boys do poorest work during the fourth grade are mathematics, penmanship, spelling and manual training; during the fifth grade penmanship, art, manual training, spelling, mathematics. The subjects in which the girls' marks drop back during the fourth grade are mathematics, geography, reading, penmanship and history; during the fifth grade mathematics, art, penmanship, geography and spelling.

A detailed study of the individual growth curves in height, weight, and lung capacity, weight-height and vital indices, and periods of physiological changes, shows that the taller and heavier boys and girls, who are also the younger of the two groups of children, mature physiologically earlier than those below median height. These physiologically accelerated boys and girls complete the work of each grade in the elementary school at an earlier age and with a higher average mark than the short, light, or physiologically retarded boys and girls.

The growth curves show there is a correlation between the *decrease in annual increment in growth* in height, weight, lung capacity (and their corresponding indices) and the *lowering in general school averages in school standing during the ages included in the fourth and fifth grades for boys and girls*. What this means will be taken up in a later paper.

A New Test of General Intelligence. L. R. GEISSLER, University of Georgia.

This test is intended to provide a continuous and graduated measure of acquired knowledge and native rationality of pupils whose age ranges between 9 and 19 years. The material consists of two equally long lists of words chosen systematically from the various realms of human experience in such a way that every word on one list is related to a word on the other. One list is hung up before the pupils and a word of the second list is written on the blackboard with the instruction to find some word on the exposed list to which the single word is related, to write down the pair and to give the reason for pairing. Then another single word from the second list is written on the blackboard with the same instruction, and this procedure is continued until the second list is exhausted.

The general intelligence is assumed to express itself in the number of words correctly paired, the fitness of the pair, the number of correct reasons, their fitness, and in spelling, expression, etc. Each of these factors is marked separately, and their total is a measure of the individual's general intelligence. With the valuable aid of Miss Ruth Collins and Miss E. A. Anderson the test has been applied to 62 girls of a preparatory school, whose ages range between 14 and 19 years. The results were correlated according to the rank-difference-method, with those of a general information test devised by Miss Collins, giving a coefficient of .75, with the pupils' ages, giving .57, and with a strength of grip test using the improved Smedley dynamometer, giving .176 as a correlation-coefficient. The test should be useful in comparing white and colored children and normal and abnormal minds. Its great advantage is the fact that it allows continuity through all grades and minute gradation of all degrees of intelligence within its limits.

A Comparative Study of White and Colored Children by the Binet Tests. JOSIAH MORSE, University of South Carolina.

A preliminary report of a study being made of the public school children of Columbia, S. C., by Miss Alice Strong. Goddard's 1911 revision of Binet's tests used. Number of children tested to date: white, 119; colored, 120. Of the whites, 25.2 per cent. tested below age; 42.9 per cent. at age; 28.6 per cent. above age. Of the colored, 60.8 per cent. below age; 30 per cent. at age; 9.2 per cent. above age.

The graph for the whites resembles closely that given by Goddard, but that for the colored is strikingly different. The range of indi-

vidual difference is greater for the latter, but the excess is on the deficiency side. Of the 119 whites, one was 3 years below age; seven 2 years below; twenty-two 1 year below; total, 30.

Of the 120 colored, one was 5 years below age; one 4 years; eight 3 years; twenty-seven 2 years; thirty-six 1 year; total 73. The whites also had one 3 years above age; seven 2 years; twenty-six 1 year; total 34. The colored had, none 3 years above; one 2 years; ten 1 year, total 11.

The "near-white" showed the widest variation both above and below standard. Four were so irregular that it was difficult to determine whether to count them with the six year group, or seven, or eight, or nine. They are therefore grouped as irregular.

From another table it appears that for the colored, 60 per cent. of the tests are too difficult; 20 per cent. too easy; 20 per cent. right. For the white, 25.7 per cent. of the tests are too difficult; 25.7 per cent. too easy; 48 per cent. right. Counting as satisfactory those who test at age, and one year either above or below gives 83 per cent. of whites and 68 per cent. of colored.

Another table yields the following results:

	White. Per Cent.	Colored. Per Cent.
In lower grade according to physical age	44.5	44.2
In lower grade according to mental age	46.2	15.8
In right grade according to physical age	53.9	47.5
In right grade according to mental age	42.9	44.2
In higher grade according to physical age	1.7	8.3
In higher grade according to mental age	10.9	40

Concerning the Origin of the Ideas of Gods. W. T. SHEPHERD, Washington, D. C.

Two definitions may be given of God or of gods: (1) A being conceived as possessing supernatural power, who is to be propitiated by sacrifice and worship; a deity; an object of worship. (2) The Supreme Being; The Eternal and Infinite Spirit; The Creator and Sovereign of the universe. The paper deals only with the origin of ideas of gods of class 1.

The writer attempts to maintain views as follows: (1) Ideas of gods, of the class considered, have arisen not from any one class of phenomena, as has been urged, as from the personification of natural objects and forces, from the personification of abstractions, from totemism, from the deification of heroes, or from Great-Makers, but from all these sources. (2) The principal factors in the genesis of

these conceptions of gods have been: imagination, primitive reason and primitive credulity. (3) There has been a progressive evolution of god-ideas with increasing intelligence and moral elevation, in peoples. (4) There has been no universal degeneration of these ideas as some have held, as that would be inconsistent with evolution. (5) Many instances of a centralization of god-ideas and of gods can be cited.

The child employs imagination, untutored reason and much credulity to explain the phenomena of the world. Primitive man employs much the same mental processes to explain his world.

We invoke evolution to explain phenomena in the animal and plant worlds, in sociological and other fields: though not yet so well worked out in the field of religion, the scientific mind can hardly deny that it applies here also. To deny it would be to deny the law of continuity.

The writer is not convinced that ancestor-spirits have been worshipped as gods. The ancestor-spirits have been reverenced.

GENERAL REVIEWS AND SUMMARIES

CUTANEOUS, KINAESTHETIC AND MISCELLANEOUS SENSES

BY JOHN T. METCALF

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Cutaneous Sensation.—Practically all the literature of the past year on cutaneous sensation has had to do with the temperature sense. Perhaps the most significant article is that of Goldscheider (12). He has been led to a retrial of his results by the disagreement of other authors. Where he found 68 cold and 56 warm spots, Sommer found only 13 cold and 2 warm. Blix and Donaldson found thick spots so large that one of them would cover a number of Goldscheider's. von Frey maintained that warm spots were not sharply-defined points, but rather little fields in which sensitivity shades off at the edges. Goldscheider's retrials all support his earlier conclusions. The differing results of other investigators are due, he thinks, to the fact that they have not used fine enough stimuli, and have not, therefore, succeeded in stimulating single spots. Further, the warm and cold spots represent the only peripheral sense-organs for temperature stimulations. The interspaces are not sensitive to warm and cold. Wherever this seemed to be the case it was always found that certain single spots had been overlooked. In opposition to Head, who held that the phenomenon of adaptation is connected with the interspaces, Goldscheider maintains that it is everywhere connected with the spots. Finally, he has succeeded in arousing a paradoxical sensation of warmth by stimulating a warm spot with a moderately cold stimulus. He thinks that the failure of previous investigators to observe this phenomenon is due to the fact that they have used stimuli that were too cold, the cold acting as an inhibition on the warmth nerves.

Rubin (20) also notes paradoxical sensations of warmth. In general the results of the experiments reported in his article lend a support to the Weber theory of temperature sensation. This theory holds that sensations of warmth and cold are conditioned by a rise or fall in the temperature of the skin. By stimulating a small por-

tion of the skin with a carefully regulated stimulus, Rubin finds that a sensation of temperature results only as long as the temperature of the skin is changing. The Weber theory, however, meets its greatest difficulty in cases of long-continued cold or heat. The hand exposed to the freezing air feels cold for a very long period. According to the Weber theory the skin must be changing in temperature during all this time. To test this, Rubin had the subject bare his arm in a cold room. A thermometer, fastened to the skin gave a pretty good rough estimate of its changes in temperature. The experiment lasted from 40 to 60 minutes and the thermometer recorded a decrease during all this time. Moreover, the greater the drop in temperature during any period the more intense were the cold sensations experienced. Other sensations—those of dull pain and stiffness—were also experienced, and the author thinks that in ordinary observation these are not distinguished from cold.

The influence of different skin temperatures upon the pressure sense is investigated by Godefroy (11). His experiments take their departure from a statement made by von Frey to the effect that temperature had very little influence upon the threshold for pressure. The method followed was to keep the hand of the subject immersed in water of the desired temperature, and to determine the threshold for pressure of a certain spot at different temperatures. The spot to be investigated was previously marked, and the hand was held in such a way that the spot lay just beneath the surface of the water. The results show that temperature has no effect upon the sensitivity of the spot itself, but that it has an effect upon the sensitivity of the skin immediately surrounding it. Thus, if the stimulus is fine enough to affect the spot alone, there will be no change in the threshold with different temperatures; if, however, a coarser stimulus is used, it will cover more than the spot and the threshold will be affected. This result seems to reconcile von Frey's statement with the common observation that our hands are less sensitive to touch when they are cold than when they are warm.

Babák (2) contributes a comparative study. He found in earlier experiments that a decerebrated frog breathes with great regularity as long as it is undisturbed, but that any disturbing stimulus will effect a change in the rate of respiration. He now uses the changes in rate as an indication of the frog's sensitivity to warm and cold. As stimuli he used radiant heat and cold, a thermoæsthesiometer being held 1 mm. from the frog's skin. The radiant form of stimulus was preferred because contact would give vitiating sensations of

pressure. Results showed that warm stimuli cause a marked increase in the rate of breathing. Cold, on the other hand, causes a decrease. For purposes of comparison special experiments were made with the same stimuli upon human subjects. The stimuli which had produced such marked changes in the frog's respiration were scarcely sensed by the human subjects. The author regards the "polarity" of his results—that warm and cold produce opposite effects upon the breathing reflex—as of great theoretical importance. He thinks it is evidence in favor of the theory that warm and cold processes are qualitatively different.

A very thorough study of cutaneous after-sensations has been made by Hayes (13). Eleven forms of stimulus were used, all of which produced very definite after-sensations in a large percentage of cases. A clear distinction between primary and secondary after-sensations is maintained throughout. A primary after-sensation is a sensation which persists after the stimulus has been removed, a secondary after-sensation is one which reappears after an interval during which there is no sensation. The secondary after-sensation does not occur as frequently as the primary, and when it does appear it is usually preceded by the latter. A secondary after-sensation sometimes differs in quality from that aroused by the original stimulus, but ordinarily it is the same. It is impossible to summarize the numerous particular results obtained, and they can be appreciated only by reference to the original article.

The results of Kiesow (14) have already been published in German, and were reviewed in the BULLETIN last year. Chinaglia (8), who was one of Kiesow's subjects, makes a preliminary report of an investigation growing out of Kiesow's. This was that flat, hollow objects, such as rings and triangles, when laid upon the skin were subjectively filled out so that they appeared continuous. Chinaglia finds that the phenomenon disappears when figures of greater size and weight are used. A pointed stimulus applied to the skin within the border of the figure will be localized somewhere outside it. If the skin is explored with a blunter stimulus this will be correctly localized. Another study along somewhat similar lines is made by Arps (1). He finds that when stimuli of some temporal duration are used, one sensation has an assimilative effect upon another. A normal stimulus of constant objective intensity seemed subjectively to vary in intensity with the varying comparative stimulus. No such effect could be found when stimuli of momentary duration were used.

Before closing the account of cutaneous sensation mention should

be made of the work of Kiesow and Ponzo (15), although it has to do more with reaction-time than with sensation. Ponzo (19) reports two new pieces of apparatus. One of these is an improved æsthesiometric compass, the other is his "dermocalimeter" which measures the direction as well as the amount of error in point-localization on the skin.

Kinæsthetic Sensation.—Three studies on the sensation of movement have appeared during the year. That of Erismann (10) undertakes a thorough investigation of the sources of error in experiments of this sort. It addresses itself further to the solution of two chief problems: (1) to investigate the difference-sensitivity for active and for passive movements and show their relation, and (2) to ascertain whether, in comparing two extents we depend essentially upon the times necessary to perform them. With regard to the first point he found that the difference-sensitivity for active and for passive movements is about the same. If anything, greater sensitivity is to be found in active movements. As for the second point, spatial estimates are influenced only slightly by temporal considerations, this influence being perhaps a little greater for passive than for active movements. In connection with the latter point, the work of Störring (21) is interesting. He found that the subjects fell into two classes. Those who depend in their estimation chiefly on visual imagery and the position of the hand were not influenced by the rate of speed at which the stroke was made. On the other hand, the subjects who made their estimation on the basis of the movement sensation itself were influenced in this way. Störring also makes a determination of the lowest threshold for movement. For this experiment he devised a very sensitive piece of apparatus which would measure movements of 1/600 of a degree. Using this apparatus he found that horizontal movements of the elbow-joint could be sensed when their amplitude was no more than 1/200 of a degree. Hitherto the smallest threshold has been that of Goldscheider, which was about ½ of a degree. Störring thinks that his smaller result is due to the fact that in his experiments pressure sensations were not eliminated, and that these gave the subject his perception of movement.

Winter (23) is chiefly concerned with the question of whether the sensation of movement is derived from the muscles and tendons or from the joints. He determines the limen of movement at four different speeds and with the arm held so that the elbow-joint makes different angles. He also uses the electric current and ether for

anæsthetizing parts of the arm. Anæsthetization of the joint produces little if any effect upon the limen of movement. The angle at which the arm is bent in the experiment is found to have a great influence upon the limen. As this angle has a great effect upon the shape and position of the muscles and tendons, and very little effect upon the joint's action, it points toward the conclusion that the muscles and tendons are the seat of the sensation. This conclusion finds further support in the fact that anæsthetization of the muscles raises the limen more than anæsthetization of the joint. Allied to these investigations of the sensation of movement is the work of Ducceschi (9). He has discovered the little end-organs of Ruffini in the tongues of birds. His morphological conclusions do not concern us here, but his conclusion as to the function of these bodies is interesting. The first indication of this he found in the fact that the bodies are present in large numbers in the tongue of the parrot, but almost entirely lacking in the chicken's tongue. The parrot's tongue plays an important part in the process of eating and the chicken's a very minor one. The author is led to the belief that these bodies are the end-organs for the sense of movement. This view is further supported by other considerations, the most important one being that in the higher animals these bodies are present in greatest number in the connective tissues between the muscles, and in the periosteum.

Organic and other Sensations.—Cannon and Washburn (7) outline at length the two theories with regard to the sensation of hunger. One theory holds that it is a general sensation with a local reference, the other that it has a local peripheral source. Their own experiments support the latter view, showing as they do that the sensation of hunger is accompanied, or just preceded by a strong contraction of the stomach. These contractions were recorded directly on a smoked drum. Washburn, who acted as subject, accustomed himself to swallowing a rubber tube, to the end of which there was attached a small rubber balloon. He did this every day for several weeks, keeping the tube in about two or three hours each time. When he had grown quite accustomed to it the experiments were made. The balloon was inflated inside his stomach, and the end of the tube was connected with a water manometer provided with a float recording-device. Whenever the subject stated that he experienced the hunger sensation, powerful contractions of the stomach were invariably recorded. The contraction always coincided with the reported sensation, but came a little before it. This is taken as evidence that the contraction is the cause of the sensation. The intermittent char-

acter of the hunger sensation which psychologists have noted is explained by the periodicity of the contractions.

Neumann (18) recurs to the question of the sensibility of the inner organs in some experiments performed upon dogs. These form a continuation of his previous work with frogs. He succeeds in arousing pain reactions by pinching the intestine between the fingers and by stretching it. He also reaches further conclusions with regard to the distribution of nerves from the sympathetic system to the viscera.

Beck (5) reports a study of the static sense of deaf-mutes. In an investigation of thirty young deaf-mutes and an equal number of normal children he finds that the inferiority of the mutes shows itself only under artificially arranged conditions. As long as they have their eyes open they can balance as well as normal children. He had all the children perform various balancing feats blindfolded. It then appeared that the mutes were very much inferior to the normal children, and that the percentage of failures is great in proportion to the degree of deafness of the individuals. He also tested the mutes for their orientation in the water, and found that most of them were able to dive and swim perfectly well with their eyes blindfolded. Among those who did this successfully were some whose vestibular apparatus would not respond to the *Drehstuhl* experiment. These facts contradict the statement often met that deaf-mutes lose their orientation in the water.

Mann (16) describes the vestibular reactions that occur when a galvanic current is passed through the head from ear to ear. The functions usually attributed to the labyrinth are augmented on the cathode side and decreased on the anode side. One of these is bodily tonus. This does not manifest itself in a sinking or relaxation of one side of the body, but if two equal weights are held one in each hand, that in the hand on the anode side will appear heavier than the other, owing to the greater innervation necessitated by the decrease in tonus on that side.

Camis (6) shows that extirpation of the labyrinth on one side in rabbits, cats, and dogs, produces the same effect upon certain reflexes —pupillary, vaso-motor, etc.—as the severing of certain sympathetic nerves. Maxwell (17), experimenting with the horned toad on the turn-table, finds that its compensatory movements are not affected by a change in the distance of the animal from the center. With the same rate of rotation the compensatory movements are equal in extent whether the animal is 25 mm. or 300 mm. from the axis of

rotation. But if the animal is kept in the same place and the rate of rotation increased, the compensatory movements become greater. Thus, they are excited not by the centrifugal force, but by the angular velocity.

Two authors have attacked the question of sensations of tickle. Basler (3) finds the relation between the weight of a stimulus drawn across the skin and the intensity of the sensation of tickle aroused. There is a certain range of weight within which stimuli arouse maximum tickle sensations. If the stimulus is increased beyond, the sensations of tickle decrease, until finally only pressure sensations remain. His second article (4) is simply a continuation of the first, reporting experiments in which the method was applied to the sole of the foot. Basler is led to the conclusion that the end-organs for sensations of tickle are localized both in the skin and in the deeplying structures. Thöle (22), producing anæsthesia of the cord by injection of stovain and cocain, finds that sensitivity to itch disappears just before sensitivity to pain, and regenerates just after pain. Tickle bears a similar relation to touch. He concludes from his observations that itch is due to a partial arousal of pain fibers. Tickle is related to touch in the same way.

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PSYCHOPHYSICAL MEASUREMENT METHODS

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The relation between the method of just perceptible differences and of constant stimuli is one of the most disputed problems of psychophysics. It has been shown that both methods give the same result, if the calculations are made on the same material, while the results differ if the material for the method of just perceptible differences is collected in the traditional way. The reason is that in these experiments the subject almost unavoidably obtains some information as to the objective relation of the stimuli, while all such information can be withheld in the method of constant stimuli. The attitude of the subject in the two methods is different and one must not expect that the results obtained under different conditions should be directly comparable. Fernberger (2) raised the question whether the experiments for the method of just perceptible differences could be performed in such a way as to prevent the subject from obtaining

any information of this kind and succeeded in doing so by mixing them up among those for the method of constant stimuli. He experimented with lifted weights, keeping the subject always completely uninformed as to the objective relation of the stimuli to be judged. His results warrant him in saying that under these circumstances there is no significant difference between the results of the two methods. On account of the large number of experiments performed Fernberger had an opportunity to study the effect of practice in psychophysical experiments. In an unpracticed subject the change is at first progressive, but after a rather great number of experiments (about 400 with each comparison stimulus) a stationary condition is reached and the results vary in the same way as those of a subject who had considerable practice at the start. This seems to restrict the use of the method of constant stimuli for anthropological research, owing to the impossibility of making the large number of experiments necessary to reach the maximum of practice.

The interest in Weber's law does not flag, as is seen by the papers (3) and (4). Groselj starts from the distinction between distance and difference (*Abstand*) and gives an interpretation of the logarithmic formula similar to the one offered by Meinong. He sees in Weber's law an abstract principle which is not impaired by any exceptions: it would retain its value even if it did not hold exactly in a single case. This view is quite frequently found among Austrian psychologists. Henri and Larguier des Bancels discuss Weber's law with reference to animal psychology. It does not seem that abstract discussion will advance the problem considerably. This so-called law is an empirical proposition and one ought to begin by collecting a large empirical material and by finding out the real facts about it.

Lipps (5) criticizes Wirth on two grounds, first for supposing that there are limits outside of which the judgment never varies, and second for not taking into account that the upper threshold can not be smaller than the lower threshold.

Lorenz's paper (6) shows how the psychophysical methods work in actual application. He studies the influence of different distributions of attention on the estimation of the length of lines shown to the subject by means of a tachistoscopic arrangement. The subject had to direct his attention to one of the several pairs of comparison stimuli exposed, but judgments had to be given on all of them. The results are treated by Wirth's formulæ for the method of constant stimuli and show very characteristic variations in the values of the quantities h and S.

Stephanowitsch (7) studies the method of mean error. Müller's criticism of this procedure is that it is not sufficiently well defined, since one does not know by which steps the value of subjective equality was reached. It may be suspected that certain values of the comparison stimulus occur more frequently than others do. Stephanowitsch experimented with straight lines, requiring the subject to make a variable line equal to the standard. Hitched to this instrument was a graphical recording apparatus which showed the length of the lines which in the course of an experiment actually were compared with the standard. It is found that the subject judges small differences much more frequently than larger ones. Another series of experiments serves for the comparison of this procedure with the method of constant stimuli. The experimental arrangement is very clever but the paper is written so carelessly that one can hardly rely on any one of the conclusions.

Thomson (8) takes up the study of the method of groups as described by Stratton and W. McDougall. Using the notion of the probability of a judgment, he arrives at formulæ which are analogous to those for the method of just perceptible differences. These formulæ are tried out on a material obtained from experiments on tactual sensations, and compared with those for the method of constant stimuli. The coincidence is satisfactory, from which it follows that the method of groups is a real psychophysical measurement method. Thomson then proposes a new form of the totalling process in the method of constant stimuli, which seems to be a correct consequence of the definition of the threshold. Suppose that 56 heavier judgments were given in 100 comparisons of 100 and 102 gr., and 73 such judgments in 100 experiments on the comparison of 100 and 104 gr. The threshold has been examined on 200 occasions. In 73 cases it was below 104, and in 57 cases below 102 gr.; if, however, the threshold is below 102 it also is below 104 gr., from which it follows that the total number of cases in which the threshold was below 104 gr. is in these 200 experiments $57 + 73 = 130$, and the relative frequency is $\frac{57 + 73}{100 + 57} = \frac{130}{157}$. It is shown how these numbers are calculated in the case of a larger number of comparison stimuli. The end of the paper contains a very interesting study of the variations of the sensitivity during a sitting, by a novel procedure.

Thomson's paper is very significant in several respects. Experimental psychology and anthropology use a great many procedures which can by no means be classified among the old psychophysical

methods. The method of groups is one of them and it has done excellent service, but it has found practically no recognition in the books of Müller, Titchener, and Wirth. A conscientious methodology ought to take up every one of these processes separately and make it the object of a special study such as Thomson's of the group process. His new totalling process at first sight seems merely to be interesting. A little consideration, however, shows that it has far reaching consequences, although not pointed out by Thomson. There does not seem to be a fault in the argument by which the relative frequencies are determined that the threshold will be below a certain value. From this it follows that these numbers, and not the relative frequencies of the different judgments, have to be used in the formulæ deduced from the old notion of a threshold. It has been shown before that the notion of a threshold is useless, because all the problems of psychophysics can be solved without it, and it now is seen that this notion also is misleading.

My paper (9) contains tables which serve the purpose of facilitating the calculations in the method of constant stimuli. The older treatises presented this method without any regard for its practical use, the consequence being that it was entirely unpractical owing to the long and tedious computations, which not only required much time but also a good working knowledge of the method of least squares. It is necessary, in order to make this a real working method, to eliminate all cumbersome calculations and to avoid involved mathematical reasoning. These tables are the result of my efforts in this direction and it seems that they leave little to be desired. The computation for one set of data, a "*Vollreihe*," takes on the average not more than 25 minutes and I have seen sets worked out in less than 15 minutes. The little book (10) gives these tables and some practical hints on working out data, when these tables can not be used. It is important to notice that the tables can be used only when the comparison stimuli are equidistant, which shows the importance of a careful selection of the intervals.

Reference (11) is a critical review of W. Wirth's textbook on psychophysics. In so far as the practical application is concerned our agreement is almost complete and differences of opinion exist only in regard to the following points: (1) The notion of the threshold, which I consider as a useless and inconsistent hypothesis; (2) the value of the ideas of Bruns, which I consider entirely unpractical on account of the cumbersome computations required, which are not offset by any advantages to be gained; (3) the definition of the

point of subjective equality, which Wirth does not base on empirical evidence; (4) the method of just perceptible differences, to which Wirth attaches very little or no value, while I must insist that this method has stood the test of practice and can not be discarded by purely theoretical considerations. The last point is very briefly dwelt upon, because my intention is to make it the object of a separate study.

Wirth (12) takes up the definition of the point of subjective equality. The paper is chiefly of a mathematical nature but not void of interest for a reader who is thoroughly familiar with the ideas of Bruns. It shares however the weakness of all papers which make use of the propositions of the "*Kollektivmasslehre*." A great variety of formulæ is given, but no reason is advanced why any one particular formula should be used. Wirth believes to have reasons why my definition of the point of subjective equality (*i. e.*, the stimulus on which greater and smaller judgments appear with the same frequency) should be given special prominence, but his arguments do not seem sound. According to his principles he should have merely said that it is one of the many possible definitions of this quantity, which happens to be distinguished by certain interesting properties. He fails to see that the definition of the point of subjective equality must contain an empirical element and that mathematical speculations can decide nothing about it. A result of historical interest is the close relation which Wirth finds between certain of his formulæ and Fechner's old method of right and wrong cases. Wirth's second paper (13) contains a discussion of Lipps's theory of mental measurement.

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AFFECTIVE PHENOMENA—EXPERIMENTAL

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Weld (4) publishes the results of experimental work on musical enjoyment. Plethysmographic and pneumographic records were taken. Phonographic reproductions of various compositions were used. Normal curves were taken, then the music began and lasted about five minutes. Afterwards the subject gave a careful introspection.

The music was almost always accompanied by decrease in the volume of the arm. The plethysmographic curve fluctuated with the state of attention, and the author thinks the reaction is really due to attention. The heart rate became accelerated regardless of the character of the music. Respiration conformed to the phrasing when attention was directed to the phrases. The most usual effect on breathing was to make it irregular and in some subjects it varied in rate and depth with the changes of the music.

For the majority of observers, the most important factor in musical enjoyment is the motor reaction, real or imaginal, including adaptation to the *Takt* and to the larger rhythms, mimetic movements and movements corresponding to changes in pitch and intensity. Of less importance is the play of visual imagery determined mostly by these motor responses. Other observers derive more enjoyment from the intellectual analysis of the musical structure, mostly on the basis of auditory imagery. Music cannot convey the same imagery to all observers. Besides pleasantness-unpleasantness, the music directly arouses feelings of excitement and repose, depending on the character of the rhythms, length and pitch of notes and use of major or minor keys.

The Leipzig laboratory has furnished two articles. Sartorius (3) reports on the feeling character of a succession of two chords and the effect on respiration and pulse. The chest breathing and the radial pulse were recorded. Each test consisted of a normal period followed by a succession of three pairs of chords with a short interval of time between each pair. An introspective description of the experience and comparison of the three pairs was then taken. After a discussion of the introspections, the author concludes that the feelings described are complexes according to the Wundt tri-dimensional theory, each dimension representing a manifold of qualitative variations. A noticeable feature which is emphasized is the mixture of opposite qualities, such as excitement and repose, in one experience. A few extracts from the records are reproduced, though they are too short to give the reader a satisfactory perspective. The pairs of chords usually lasted from two to four breaths. Tables are made in which the tests are grouped according to the feeling complexes present and for each there are given the variations from normal in length and depth of breathing, in the ratio of inspiration to the total breath ($I : L$), in the ratio of the depth at the middle of inspiration to the total depth ($Hi : H$) and in the similar ratio for expiration ($He : H$).

The author concludes that for excitement there is shorter and deeper breath, increase in the ratios $I : L$ and $Hi : H$ but not in $He : H$. Repose gives relatively little decrease in length and a shallower breath, decrease in the ratios $I : L$ and $Hi : H$, and increase in the ratio $He : H$. Disagreeableness is characterized by decrease in all factors. With strain there is increase in the ratios $I : L$ and $He : H$ and decrease in all other factors of respiration; in some cases there is decrease in all factors. Excitement tends to give a faster and higher pulse beat, repose the opposite. The conclusions are not very obvious from the tables; with such mixed conditions one can prove too much. One is bound to ask whether in making the classification sufficient care was taken to prevent any suggestion from the organic expressions.

Westphal (5) assumes the truth of the tri-dimensional theory of feeling and a corresponding system of organic expression taken from the rather conflicting results of previous work in Leipzig. He studies the process in a simple form of choice reaction and attempts on the basis of physiological expression to prove the emotional theory of will. Records of breathing and pulse were taken and tables were made showing statistically the number of cases in which there was an increase or decrease in the length and depth of the breath, in the

inspiration-expiration ratio, and in the heart rate during the successive periods of the reaction. He concludes that in the period just preceding the signal to react, strain dominates; after the signal, excitement rises in importance. The feeling of activity up to this period is then composed of strain and excitement. After the act we get a feeling of fulfillment and satisfaction, composed of relaxation and repose. Excitement has the greatest expression-valence. To an outsider there would seem to be nothing but a brief restriction of breathing with the attention to the awaited signal, a release from this afterward and accompanying effects in the pulse.

Kläsi (1) took records of the association times and accompanying psycho-galvanic reactions for a series of words. The tests were repeated with each series three, four or five times with five minute pauses between. It was found that in seventy-two per cent. of the cases a stimulus that gave a galvanic reaction larger than the average in the first test also gave a relatively large reaction in the repeated tests. The author thinks the intellectual side of the association process could not vary in this regular manner and the galvanic response must express the affective condition. If we consider other characteristics of a complex, such as lengthened association time, change in the association with repeated test, etc., we find that the more such signs are present with a stimulus, the greater the probability of an accompanying galvanic reaction which is greater than the average. The more often a test is repeated, the more seldom does a relatively large galvanic reaction correspond to a long association time. Usually a large galvanic reaction is followed by a relatively small one. The interpretation given is that the perseverance of the strong affect may prevent the proper comprehension of the later stimulus and interfere with the association process, which would give a long association time but would fail to arouse associations connected with new affects. The experiments reflect Jung's suggestions.

Roblee and Washburn (2) studied the affective value of different articulate sounds. They used nonsense syllables composed of an initial vowel and a final consonant. The syllables were pronounced with as uniform conditions as possible. The observer was asked to express a judgment as to agreeableness or disagreeableness by using the numbers 1 to 7 as usual. There were fifteen observers. The most agreeable vowels tested in this way were *ah* and *get*; the most disagreeable was *mud*. The most agreeable consonants were *l*, *m* and *n*; the most disagreeable were the gutturals *g* and *k*. There was

most disagreement concerning *fate*, *oi*, *oo* and *zh*. *Ai*, h*a*t, *s* and *j* were neutral.

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AFFECTIVE PHENOMENA—DESCRIPTIVE AND THEORETICAL

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Among the general theories on this subject in the literature of the past year that of von der Pfordten (**14**) contravenes all commonly accepted notions by denying to pleasure and pain the character of feelings. According to him they belong to the psychophysical process of sensation; they are its "vital variable"; and *Unlust* differs from *Schmerz* only in degree. Feeling is central, psychical, related not, like sensation, to the organism, but to the "individuality," and is always attached to a complex of presentations, of which it is the "intensity." Feeling is one, an incessant connected stream in the ego, and of but one kind. It is not feeling, but the presentations on which feeling is projected which are joyous or sad. How these opposite qualities arise through relation to differing intensities of the same thing is not explained; indeed, the whole construction seems vague and arbitrary. Latour's theory (**8**), worked out in connection with problems of general philosophy, is that emotion, including pleasure and pain, expresses a relation of presentation to "will": emotion is aroused either by the success or apparent increment of will (volition, power or action), or, conversely, by the thwarting of will or the passage from more will to less. Taking into account the facts of illusion and simulation and properly interpreting its terms, this theory describes the general character of our sentiments and emotions fairly well. Whether it explains elementary sense-feelings is more

doubtful. The author aims at mathematical deduction and his treatment is accordingly abstract, reminding us of the discussions of the passions in St. Thomas and Spinoza.

Several writers express in more modern terminology the prevailing tendency to regard the affective life exclusively from the point of view of action. Whereas Latour takes as independently given facts instincts of conservation, of growth and of freedom, these being the foundations for his theory, Rignano (**16**) finds the basis of affective tendencies in the disposition of every organism to preserve its "physiological invariability," and hence to restore it when it is disturbed. If the enivronment is unyielding, a new optimum of condition may be established by adaptation. From this principle we derive directly a large number of particular tendencies, — needs, longings, attractions, etc. The principle itself implies the capacity of the elementary states to deposit "specific accumulations," and is hence "mnemonic" in character, like habit in the nervous system. With the development of the central nervous system, specific accumulations in the brain may represent, and even be substituted for, those of purely somatic origin. Other affective tendencies are derived indirectly under the "law of transference"—the substitution of a part for the whole. Add intellect, and the number of affectivities which may be acquired by the indirect way of transference and combination is practically infinite. Ferrari's problem (**7**) is to find a "seat" for these affective tendencies. Following Mosso and others, he selects the sympathetic system, between which and the cerebro-spinal system he seeks to establish a functional dualism. There is thus an organic opposition between the life of feeling and that of intellect. Among the facts which more obviously favor this hypothesis is the protective character of the expressions of the coarser emotions. The theory of emotion is peripheral,—the emotional mechanism in the sympathetic ganglia is analogous to the action of the sense-organs. A distinction is drawn between the emotion, the consciousness of the emotion and the motor consequences of the consciousness. The hypothesis rests on physiological data admittedly obscure. Whether it would preclude the acquisition of new affectivities by means of the later developed system, as suggested by Rignano, is not quite clear. It is finally applied to such "subconscious" phenomena as elective affinities and other mysterious attractions and repulsions. Ribot (**15**) formulates the motor theory in general terms: the residua of affective states consist in isolated or associated tendencies. Specific conscious emotions are too fleeting to be organized. When they

pass, their only stable representatives are tendencies, movements. Pure affective consciousness is less a phenomenon than an epiphenomenon.

A case of one of those mysterious antipathies referred to by Ferrari, that of a man with an abnormal dislike for brown, is traced by Tait (18), by the method of free word-associations, to a strongly emotional forgotten experience in the individual's boyhood. Maternal love, in the development of which Rignano finds a strong support for his theory, is treated from the comparative point of view by Mme. de Maday-Hentzelt (10). Her study explodes a number of popular fallacies by pointing out the utilitarian, organic basis of this complex of instincts in animal life and by exhibiting the whole development, peculiarly enriched and modified in the human mother by social conditions, as still going on. Moll (13) finds love, the basis of which is the sexual impulse, physiologically and psychologically distinct from friendship, but admits the ambiguity of the symptoms in certain cases.

Several writers treat of æsthetic experiences. Bergson's now familiar theory of comic laughter (3), already examined in these pages (Vol. IX., p. 354), needs here only to be mentioned. It is in part accepted and in part criticized by Latour (8), who relates laughter, in terms of his own general theory, to "the recognized defeat of the non-ego in its aspiration towards being or fuller being." The most noteworthy contributions in this field are the articles by Döring (4) and Meyer (12) criticizing the *Einfühlungstheorie*. Döring objects to the term *Einfühlung* on linguistic grounds and both writers are agreed that, in the sense given it by Lipps, it expresses only a part of the æsthetic experience and is by no means, as claimed, its sole, or even its most fundamental, principle.

Baldwin (2), difficult and suggestive, as usual, traces the genesis of practical norms in a movement parallel to that which he had previously traced for the "synnomic" judgments of truth. The movement passes through a pre-moral, social, "syntelic" stage effected through the organization of interests. The main points are that objects of cognition are selectively determined by motives of interest, that affective states are revived and recognized, but have no direct confirmation in their simple, ungeneralized form beyond the mind of the individual, and that an "affective general" is progressively organized in a mass of common interests by "ejection." Other processes are required to convert the social common into the moral imperative. A novel feature of the discussion is the comparison of

affective and theoretical implication under the logical categories. Affective universality, it is observed, is reached by other means than implication and inference.

Wallis (**20**) cites a multitude of illustrations from savage life in support of the thesis that fear in religion is originally the subjective counterpart of the element of the unusual, or apparently uncaused, in the sacrosanct. Leuba (**9**) points out that though fear is the most conspicuous emotion in primitive religion, it is not the only one. Religion originates in the response, in a particular situation, to a sense of the presence of an invisible being. The emotion, accordingly, may vary with the situation; it may even approach the tender emotion, into which, indeed, fear passes, as religion develops, through the intermediate stages of awe, reverence and sublimity. The place of fear in primitive religion is due to the fact that it is the first of the well-organized emotional responses and biologically at first the most valuable. Segaloff (**17**) interprets the ecstatic states observed in certain mystical sects of Russia as a relapse to more primitive conditions when concentration of the psychic activity on a single point was valuable in the struggle for existence. The mental character of the religious ecstatics is infantile. But strong emotion, with restricted consciousness, is a powerful incentive to the release of the body's latent energies, and when a community is engaged in the struggle for existence it is important that there should be in it individuals ready to sacrifice themselves for its preservation in ecstatic self-surrender.

A protean variety of symptoms, ranging all the way from unconscious *malaise* to reasoned despair, are included by Tardieu (**19**) under *ennui*, and scarcely less numerous are its conditions. Its fundamental reason is "an appreciable slowing down of our vital movement." The malady is universal and irremediable; there are only palliatives. The author's pessimistic philosophy—life has neither basis nor goal—colors his descriptions. Dupuis (**5**) contests the views of Hartenberg and Dugàs, the one that timidity is a phenomenon of hyper-emotivity, the other that it consists in an exaggeration of the need of sympathy. Neither view is borne out by the facts, and the first is open to the further objection that it is methodologically questionable to explain a predisposition to a certain class of emotions by the general property of "emotivity." Dupuis's own view is based on Janet's conception of psychasthenia; timidity is inaptitude to bring about the operations necessary to safeguard and enlarge the social ego. Babinski and Dagnan-Bouveret (**1**) in an

important article contest the theory which ascribes the origin of hysteria to an emotional shock. This theory, they hold, is due to the application of an imperfect method, that of interrogating the subject as to her past history. In opposition to this method of retrospection, the method of "prospection," *i. e.*, observing what follows when conditions that seem favorable to the development of nervous troubles are present or absent, shows no connection between nervous shock and hysteria. The cases cited are numerous and the authors make a skilful reply to objections. Their own conception of hysteria is that it is a psychopathic state exhibiting definite symptoms that can be reproduced by suggestion and abolished by counter-suggestion. The suggestions are sustained by systematized affective states, but emotional shock cannot of itself arouse the phenomena and is even opposed to their development and persistence.

To the above list of miscellaneous character must be added two contributions of historical interest. Ferber (6) criticizes Plato's doctrine of pleasure, which he finds inacceptable on both psychological and ethical grounds. Meier (11) gives an exhaustive study of St. Thomas's doctrine of the passions. His treatment differs from that of other commentators in paying special regard to the sources of the doctrine. He argues against the view which would assimilate it to that of Augustine rather than to that of Aristotle. Aristotle is Thomas's chief source, but he is so variously indebted that the study of him is peculiarly calculated to throw a flood of light on the doctrine of the passions from Aristotle down. Descartes's claim to independence is shown to be illusory; his doctrine of the passions is conditioned by that of Thomas at almost every point.

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ATTENTION—EXPERIMENTAL

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But three experimental articles upon attention for the year 1912 have been found by the reviewer. In the main, old questions are reopened and sometimes attacked in a new way.

Chronologically, the first article is one by Lorenz (2). His apparatus, an exaggerated tachistoscope, showed lines of variable length for an average time of 135 sigma. Sometimes one pair of lines was shown, again, two, three, or four pairs were exposed. The subject was asked to judge in each case which line of each pair was the longer. Later in the experiment more complicated figures were used.

He found that the accuracy of the judgment was dependent upon the number of pairs of lines simultaneously shown (decreasing with the number), upon the degree of similarity existing between the different objects in the visual field and upon the distribution of the attention. He finds that the decrease takes place in practically a

geometrical ratio, and in general the threshold is less when similar objects are used than with dissimilar ones.

The second paper, which deals with our old friend, the relation between attention and breathing, is by Suter (3). Two Lehmann pneumographs with Marey tambours gave records from the abdomen and thorax. Reading words, adding, memory tests and visual and auditory stimuli were the materials offered to attention. Six subjects were used, from each of whom care was taken to obtain normal curves.

As a result of the introspections, he concludes that there is a difference between concentration of attention and the strain of attention. With concentration, there may be no strain sensations. The subjects further differed as to just what ought to be called the strain of attention. Some meant by it attention accompanied by strain sensations, others a condition of strain of such a sort that it becomes observed by attention. He found that these strains produced a special influence on the curve of breathing.

The effects of attention upon the breathing curve may be summarized as follows: (1) The quotient inspiration/expiration is decreased. (2) In form, the inspiration and expiration curves become straightened. (3) The transitions from one to the other become more pointed. (4) The length of the breathing curve becomes shorter with a low degree of attention. (5) There appears also to be a decrease in the height of the respiration curve. (6) In extreme cases of inhibition of breathing, the height is reduced to nothing. The length reached a maximum, the duration of which corresponded with the experience, the quotient showed a minimum of zero and the form corresponded closely to a straight line. This represented the complete checking of the breathing and was possibly the sign of the best attention.

Feilgenhauer's paper (1) is on the rate of change of attention. In these experiments, the subject was in one room and the operator and noisy apparatus were in another. By this method, the investigator endeavored to get rid of the distractions which would otherwise be present. The auditory stimuli were produced by an electric spark in a light-tight box; the visual, by an electric spark in a sound-proof box which had a glass side; and the cutaneous by an especially arranged induction coil. The apparatus was so designed that the stimuli, *e. g.*, two visual stimuli, could be given at any rate of succession, or so that disparate stimuli, such as visual and auditory, could be given with any time interval between them. A mass of over 15,000 results yielded the following conclusions: (1) The smallest

active step of attention is 300 sigma. (2) The limits of the observable changes of attention lie between 262 and 394 sigma. (3) With the different kinds of stimulation there is no great change in these values, Only with a preceding optical stimulus there occurs an increase of 35 sigma due to the noticeable after effect of that kind of stimulation. (4) The shifting of attention from one stimulus to another is a smooth, gliding one if the stimuli belong to the same sense realm. With disparate stimuli it is more irregular and sudden. The smoothness is lacking. (5) The speed of the change of attention cannot be voluntarily accelerated beyond the degree mentioned above, but it can be voluntarily slowed. Nor is it possible to let attention wander with the greatest possible speed. (6) The speed of the change depends upon the personality of the observer. (7) The position of the optical stimulation, whether it was approximately at the primary position, or 35 degrees removed therefrom, had no influence upon the speed of the change of attention. It is independent of the visual angle by which the eye perceives the stimulus. Nor does the direction of the movement have any influence in the case of optical stimuli. (8) Increase in stimulation yields neither a quicker nor a slower rate of change. It remains constant with auditory and tactual stimuli. But a retardation occurs with visual stimuli. (9) Sickness and fatigue cause the rate of change to be slowed down somewhat. (10) Neither the best attitude nor the sharpest focusing of the most expert subject can make the change more rapid than normal for that person. (11) The accuracy of the judgment of the change of attention increases with an increase of the stimulus. (12) The accuracy of judgment is greatest with well defined tactual stimuli, least with optical, while the auditory stand in between. With stimuli in the same sense realm t is greater than with disparate stimuli. (13) The change of the attention given to disparate stimuli ordinarily follows at the same speed as it does with stimuli of the same sense realm. Since with optical stimuli there is a slowing up of about 35 sigma, therefore this same slowing up is also shown with disparate stimuli when the optical stimulus comes first. (14) The individual differences are more evident with disparate stimuli, and the accuracy of judgment shows greater variation.

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ÆSTHETICS

BY ETHEL PUFFER HOWES

An outlook on the accomplishments of the year 1912 (and, in part, of 1911), in the field of psychological æsthetics, discloses some clearly-marked tendencies. Probably the book of the year most interesting for its indication of these is the *Psychologie der Kunst* of Müller-Freienfels (**20**). He emphasizes the extraordinary manifoldness of elements in the æsthetic experience, and sets himself sturdily against all attempts to compress this manifoldness into a single formula. The various partial views masquerading as complete descriptions he refers rather to the numerous individual differences, amounting to fully defined types, in the enjoyment of art; the major interest and service of the book is in the enumeration, analysis and characterization of these, denoted as, for example, the sensory-visual, imaginative-motor, and so on. The second volume is devoted to an analysis and explanation of the forms of the work of art from the point of view of economy ("maximum of stimulation with the minimum of fatigue"), which aims to take account of all experimental results in the field. The author's opening definition of the æsthetic experience as self-contained, pointing to ends outside itself, and of art as that which in the realm of sight and hearing can be fixed in objective form; his polemic against the expression-theory of art and the *Einfühlung* (Empathy)-theory of æsthetic experience ("what one is for art-creation, the other is for art-enjoyment"), are of secondary interest to the general trend exhibited. This is the emphasis on the interest of individual differences to the psychologist in æsthetics, and the tendency to draw into the æsthetic net all contents of consciousness discoverable as accompanying the enjoyment of art.

That nothing is alien to the analyst in psychological æsthetics is further exemplified in the recent book and other articles of Utitz (**25**, **26**), who indeed remarks that he is interested in a "general psychological characteristic" rather than in a final analysis of psychical structure-relations, and that, in general, æsthetics has far too exclusively busied itself with the pure æsthetic experience. Inasmuch as he sees in the *Funktionsfreuden* only an important accompanying effect of art, not its *Zweck*, and in the function-feelings in general not the constitutive nature of the æsthetic attitude; and as he explicitly notes the "*extra*-æsthetic" enjoyment, this rounding out of psychological material for the æsthetic experience has in it so far no confusion of distinctions. So much can hardly be said of

much of the literature on synæsthesia, and imaginal reactions to various forms of art (8, 19, 28). While not explicitly identifying them, these studies seem to lay emphasis on, and to tend to substitute, enumeration of gross associative factors for analysis of specific æsthetic experiences.[1] Whether tending to obliterate necessary distinctions or not, a widespread interest among psychologists in æsthetics in the accumulation of material in the outlying fields is to be noted. If much of this work seems to the reviewer like the tactics of a besieging army which should lay waste surrounding territory while avoiding the central fortress, it may doubtless be rejoined that such tactics are the necessary preliminary to a decisive engagement.

From the genial inclusiveness of these recent works, a plunge into Hamann's *Æsthetik* (12) is like going into a bracing cold bath. The aim of this little book, which professes to be but a Prolegomena, is the severe and systematic definition of the fundamental concepts of æsthetics, and there is something decidedly tonic in its sharp distinctions and divisions, and clear-cut reasoning, whether one follows them in full agreement or not. The constitutive marks of the æsthetic experience it finds in isolation, concentration and intensivation, the primacy being given to isolation; the argument connects this with a thorough-going interpretation of the concept of the disinterested in the æsthetic experience as it first appears in Kant. Among general works should also be noted the appearance of a second edition, bringing the material up to date, of Meumann's well-known treatise (17), and of an introduction to æsthetics by Lalo (14).

In a field already pretty well exploited, the new volume by Vernon Lee (15) might be characterized as "The Adventures of a Mind with the *Einfühlung*-Theory." The emphasis on the chronological determinations of the author's thought has however less interest for the student than the truly rich and varied chronicle of introspective observations by the collaborators, and by Vernon Lee in particular in the essay on "Æsthetic Responsiveness." Such spontaneous and vivid observations, whether or not couched in psychologically unassailable form, are a treasure-house of material and of suggestions for new departures. On the other hand, the author's explicit recommendations for experiment seem based on a somewhat uneven acquaintance with results already at hand. In professed parallel to a previous article by Vernon Lee on visual forms not intended to convey content, an article by T. A. Meyer (18) deals with the theory

[1] See R. M. Ogden on (27), in April, 1913, BULLETIN.

of *Einfühlung* in its application to such art forms as explicitly present themselves as expression of an inner activity. His conclusion is that complete *Einfühlung*, or Empathy, is the exceptional case, on the very limits of the æsthetic, while the real characteristic of the æsthetic state is freedom. *Einfühlung* can therefore not be adduced as the normal form of the æsthetic experience. Döring (7), also in criticism of *Einfühlung*, finds the original "*harmlos*" signification of *Einfühlung* as personification to have been merely a figure of speech, while Lipps's assumption of it as an all-explaining principle of æsthetic effect is unwarranted. In confirmation of his own "solicitation-theory" he cites Aristotle's principle of Katharsis. The theory of *Einfühlung* (Empathy) is in fact in the German literature of the year nowhere so favorably treated as in the warm, even eloquent appreciation of Basch (1), which may be recommended to the beginner as a clear and sympathetic presentment of the whole matter.

Turning to the treatments of special concepts in the field of æsthetics, we should expect the widest popular interest for Bergson's famous essay, "Laughter," in an excellent translation (2). The comic is something stiff, rigid, automatic, an excrescence on life, which should be kept plastic, consciously adapted to the requirements of every moment. As such conscious adaptation is social, so the automatic, unconscious, unadapted, is unsocial, and to this unsocial quality, laughter is the corrective. The comic is not fully in the æsthetic field, because of this ethical, practical interest. Art, on the other hand, is disinterested; and art, in general, and the drama, in special, contrast to the comic and comedy, give us life unveiled, untrammelled, individual—"offer nature her revenge upon society" (p. 159).[1] In apparent contradiction to this theory is the Freudian (3) attribution of our pleasure in wit to just the freedom it gives from social constraint on the primitive impulses; adding to this our pleasure in the economy of mental effort, and in freedom from the other constraint of logical thought. A reconciliation between these views is sought by Kallen (13) in the identification of the comic with "the frustrated menace in things, personal, social or cosmic, and of laughter with the explosion of relaxation and relief from tension before that menace."

A stimulating essay looking toward the definition of poetic *genres*, by Erskine (9)—would that all students of æsthetics were as clear on the necessity of definitions!—an ingenious reworking of the ever-fertile concept of "the disinterested," by Bullough (5), may serve as further examples of special studies of æsthetic concepts.

[1] See special review in this journal, 1912, 9, 354.

First in scientific importance for the field of psychological æsthetics is undoubtedly the book (**22**) in which Stumpf gives the results of his ethnological studies for the theory of the origin of music, with valuable criticism of the body of material in the field, and examples of primitive songs. This has already been the subject of an extended review.[1] In a later short paper with v. Hornbostel (**23**) he presents some special problems which the results already won from the phonographic reproduction of primitive and exotic music suggest to experimental psychology: the psychological possibility of scales of equal steps, like the Siamese; of extraordinarily complicated rhythms; of formulas for melodies which recall the arabesques of space-ornamentation and of the origin of parallel lines of melody in fifths and fourths among savages and Asiatic peoples with whom polyphonic music in our sense is unknown. An extended paper on "Konsonanz und Konkordanz" (**24**) leads to the redefining of fusion and consonance and the basing of "concordance" on the grouping of tones that are mutually consonant. "Konkordanz nennen wir die Eigenschaft eines Mehrklanges, die ihn zum Konkord stempelt, also seinen Aufbau nach dem Prinzip der Maximalzahl mit dem Grundton konsonierender Töne innerhalb der Octave in der Richtung von unten nach oben und nach der Rangfolge der Consonanzgrade" (p. 339).

We may also note a general work by Britan[2] (**4**) which speaks to the general reader, but seems not brought up to the point of interest to the student of advancing psychological theory; and an interesting study by McEwen (**16**) of the principles of shape in musical structure, which issues in a systematic discussion of the problem of phrasing in performance.

In the field of visual art the work probably lying nearest to the special interests of the psychologist is the second and enlarged edition of the well-known book of Cornelius (**6**), devoted to a detailed and widely-extended application of the basic idea of Hildebrand, of the necessary modifications of visual material to adapt it to our vivid and unified apprehension. In this connection may be noted special articles by Everth (**10**) and Gordon (**11**). Weisbach's (**27**) monumental volumes on Impressionism furnish to the psychologist a mine of æsthetic material, ranging from the prehistoric drawings of the cave-men to the modern painters, for a study of the effect on

[1] This journal, 1912, **9**, 200.

[2] For my references to the books of Utitz and Britan I am indebted respectively to the review notices of J. Eichner in the *Zsch. f. Philos. u. phil. Kritik*, **145**, 210 ff., and of H. B. Alexander in *J. of Phil., Psychol., etc.*, 1912, **9**, 305.

representation of the artist's giving himself over to his individual impression; but "nur das Fernbild ist impressionistisch gestaltbar." For the next step, we may refer to Ogden's paper on "Post-Impressionism" (21).

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SPECIAL REVIEWS

PSYCHOLOGY OF RELIGION

The Meaning of God in Human Experience. A Philosophic Study of Religion. WILLIAM ERNEST HOCKING. New Haven: Yale University Press, 1912. Pp. xxxiv + 586.

No other recent work on the philosophy of religion contains, I believe, as many challenges to contemporary thought as does this looked-for volume by Professor Hocking. It bristles with dissent and paradox, sometimes in the Chestertonian manner, as when we read that "the church . . . is always right in claiming to be infallible. Any church which modestly declines such pretension . . . does thereby stamp itself . . . as fraudulent." But "what the church chiefly has to learn is not to be infallible in regard to *too much!*" The explanation of this paradox is that the book as a whole reasserts the idealistic metaphysic but endeavors to fill the ancient gap between "Idea" and religious experience. The inability of idealism to worship must be remedied, the author thinks, and for a remedy he turns, not to the pragmatic idealism of Royce and others, but to mysticism. From Plato down, idealism has often recognized its affinity with mysticism, but as often as the two have coalesced the specifically religious quality of mysticism has largely evaporated. Hocking's paradox with respect to infallibility is a reflection of his attempt to retain both the absolutist point of view and the particular qualities of religion.

My purpose in what follows is not to review the book as a whole, but to answer a single, limited question: What significance has this work for the psychology of religion? Hocking's desire to make idealism *seem* to be as concrete and religious as it has always *claimed* to be takes him, of course, into the field of psychology. Yet this statement will mislead unless I hasten to add that his point of view is the traditional one of metaphysical idealism: To think anything whatever is to think the Absolute; a "Whole-Idea" is the prius of all particular ideas; the only proof of any reality is the ontological (in some sense); the existence of God is certain because in knowing nature I am not alone. This is the ever-recurring point of view, whatever the immediate topic. But Hocking's effort to concretize idealism is original,

resourceful, and often racy. In distinguished degree he possesses the ability of the great idealists to detect subtle affinities, to dart shafts of light into long ranges of life, even to say the wise word.

Competently acquainted though he is with the data of the psychology of religion, however, he makes little attempt to use or to construct empirical generalizations in this field. Perhaps it is not unfair to say that his theory does not require many data, and that, indeed, whatever facts the psychology of religion might upturn in its researches, his central propositions would remain exactly as they are now and the grounds for them would be neither increased nor diminished! At two points, however, his argument has a psychological character. The first is his effort to rescue religious thought from what he regards as its present retirement into subjectivity. His chapter on "The Destiny of Feeling," in spite of its inadequate appreciation of the motor aspects of feeling, is a fine presentation of the idea-aspect. Feeling is, in part, pressure toward definition of a situation; as soon as the situation takes the form of clear idea the pressure is released. Religious feeling, accordingly, is not a substitute for knowledge, but a preliminary stage of knowledge. No doubt much current religious thought needs this correction. A doubt remains, however, as to the adequacy of Hocking's exposition. Granted that at the terminus of feeling we discover a definite idea that was previously obscure; does it follow that the definition of ideas is the function of feeling?

Again, one might look far before finding a more stimulating brief presentation of the idea-aspect of all valuation than the chapter on "Idea in Organic Union with Feeling." Hocking sums up his position in the proposition that all valuing "is a way of knowing objects with one's whole-idea." Though Urban is not mentioned, the contrast between the two points of view is obvious, and the issue is joined, as it seems to me, upon data that are susceptible of empirical analysis. A brief review cannot undertake to adjudicate this intricate question, but it is in order to ask whether to value is not to discriminate values; to organize them, therefore, and finally to assert some sort of finality or reality. If so, that which Hocking calls knowing with our whole-idea is a fact, whether or not his exposition of the fact is adequate.

The second point at which the interest becomes distinctly psychological is the incorporation of religious mysticism into idealism. To many this will look like another "retirement into subjectivity." Certainly the resort to mysticism in ages of criticism or "enlighten-

ment" must be so interpreted. But Hocking is interested in only a part of mysticism, its idea-side, where he thinks he finds objectivity and universality. Therefore he abstracts not only from all that is pathological or automatic, but also from all that is emotional or even historical. Now, because mysticism is intellectualistic, being an assertion of intuitive knowledge, it can fuse with the intellectualism of idealism. Both, moreover, seek their goal by negation of the finite. Hocking even praises the *via negativa*, which Inge, the most eminent advocate of Christian mysticism, regards as mysticism's chief fault. The consistency here is admirable, but let us see at what cost it is purchased.

The author undertakes to exhibit idealism and worship in continuity with each other. To this end he identifies worship with mystical experience. Apparently this confuses a species with its genus, but it at least awakens hope that we shall reach at last something concretely religious, some experienced content, or some way of meeting a particular situation that will demonstrate an idealistic heritage. What we are actually offered as the specifically mystical is only the form of the experience. This, of course, has universality, just as pure being and pure nothing have. "This is the chief part of the mystic knowledge which cannot be otherwise known, namely, that the mystic experience is possible." Just form, not content! It names itself Substance, and it claims to be self-contained, but it looks for its attributes elsewhere.

Why does Hocking assert so little for the mystical revelation? It is not captious to suppose that he is guarding against being "infallible in regard to *too much*!" He has seen that every specific item of any mystical deliverance is historically mediated just as opinions are. He avoids the pitfall into which several recent defenders of mysticism have fallen of seeking the truth of mysticism by abstracting its common elements. James, for instance, found great significance in the consensus of mystics the world over that they immediately know themselves to be continuous with a larger world, spiritual in nature and good in quality. But this is a dubious defense; it accepts a part of the mystic's revelation upon the mystic's authority, but rejects other parts (the details, such as Brahm, or suffering love) in pure arbitrariness. In the actual experience the details stand on exactly the same level as the generalization that is found in them.

Hocking is the first defender of mysticism, as far as I know, to accept the logical consequences of this situation. He goes back of *all* content to pure form. What this is we can see most simply by

asking what one remembers after coming out of extreme mystical absorption, that is, from a state in which the mental content is reduced to the lowest point consistent with subsequent recall. The answer that we obtain is that one was certainly in an objective world, though the details of it are (now at least) a blur. Perhaps we may say, then, that any experience that we can suppose to have occurred involves consciousness of an objective world. This is my own rather than Hocking's approach to the question, but I think it will indicate the psychological ground for his contention that the mystical experience reveals the general ontological background of all thinking.

The net result, then, of the appeal to mysticism is that individuals experience the real, that the duality of thought and reality is overcome, but that the reality thus revealed is only reality in general, the details of which must be ascertained by ordinary mental labor. This is the outcome of the effort to help idealism to worship. The specific qualities of religious experience remain just as remote from the "Idea" as they do in unadulterated Hegelism. They belong in the sphere of the fallible, as Hocking himself abundantly shows.

All that is really significant in the mystic experience, then, permeates life as a whole. It is present alike in the revealer, and in him who tests the revelation to see whether it be revelation indeed. It is present in all invention, even in the inventiveness whereby an induction arrives at its goal. To call this mysticism, or worship, however, is to use terms in a confusing way. Historically mysticism is an appeal from ordinary experience to a specialized kind of experience, from the man in the street to the specialist. The appeal, if we accept Hocking's position, breaks down by accepting ordinary experience as the final arbiter. It follows that we cannot define religion except by analysis and generalization. And, as to the meaning of God in human experience (as distinguished from the meaning in my experience), we must inspect the mean-*ings* that appear in the history of religion. Upon Hocking's own showing, then, a genetic psychology of religion might be useful in helping him solve his own chosen problem.

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UNION THEOLOGICAL SEMINARY

A Psychological Study of Religion. JAMES H. LEUBA. New York, Macmillan, 1912. Pp. xiv + 371. $2.00 net.

Students of the psychology of religion have many years been hoping for a book on the subject from the pen of Professor Leuba,

who has contributed so much in the form of articles and monographs to the development of this branch of psychology. The book has at last appeared, the first of a proposed series of three. This fact must be borne in mind in judging the book, lest we criticize the author for leaving so many aspects of the psychology of religion untouched. The subtitle of this volume shows us the limit of its aims. It is a study of the "origin, function, and future" of religion; not an analysis of the religious consciousness. Such an analysis is to be the subject of the second volume as planned; while the third will deal with the dynamics of religious life.

The question of the origin of religion and its relation to magic can be understood only if we know pretty clearly what we mean by religion and what by magic. Religion, according to our author, is one of several types of human behavior, namely a subdivision of what he calls the "anthropopathic" type. It is of the same general nature as the attempt to influence the action of one's fellow—and differs from it only in being directed toward unseen and superhuman beings. Magic, on the other hand, is behavior of quite another type, namely "coercitive." It is based upon the belief that if certain actions are performed certain results must follow, without any intervention from any personal power and "in essential disregard of the quantitative relations implied in the ordinary and in the scientific dealings with the physical world." Leuba thus differs with Frazer in his view both of the relation of magic to religion and of the relation of magic to science. Magic, he insists, is *not* "primitive science"; science grows out of "mechanical behavior" and the observation of quantitative relations between events, and as far back as we can go is clearly distinguishable from magic. And, on the other hand, magic is neither the mother nor the daughter of religion. Religion presupposes the belief in personal powers who may be wrought upon by anthropopathic behavior (prayer, sacrifice, etc.); whereas magic, or at least most magic, is connected with the belief in an impersonal power (*Mana*, *Wokonda*, *Manitou*) which mysteriously permeates things and people and may be utilized in quite impersonal fashion.

Animism is thus accepted as the intellectual part,—*i. e.*, the *belief*,—of the earliest religion. And our author has an interesting chapter on the origin of this belief which should be read by everyone interested in anthropology. The view that he propounds may best be presented in his own summary: "1. Gods grew out of several different ideas of superhuman beings. 2. These beings had independent origins. 3. The attributes of the gods differ according to their

origin. 4. The historical gods are usually mongrel gods, the outcome of the combination of characteristics belonging to superhuman beings of different origins."

Professor Leuba's suggestion (not indeed entirely original with him) that animism had not one but many origins is so obvious—and so persuasive and useful—that it is a pity it was not publicly emphasized and generally accepted long ago. A great deal of good gray matter has been wasted in the effort to determine whether religion originated with dead ancestors *or* with nature forces—as if it could not have originated with both. And once this pluralistic hypothesis is adopted, we are enabled, as Professor Leuba shows, to understand the strange variety of primitive gods, which on the old monistic theory was very baffling.

As we turn from Part II., "The Origin of Religion and of Magic," to Part III., "Religion in its Relation to Morality, Metaphysics and Psychology," we seem to have come upon another book. Especially is this true of Chapter 11—the gist of which was presented by Professor Leuba at the recent meeting of the American Philosophical Association. Anthropology here gives way to theological discussion, and the style itself takes on a change and becomes frankly controversial. And here again Professor Leuba's views cannot be better presented than in his own summary:

"My task in this chapter will be to show: (1) That belief in the gods of religion and, indirectly, certain other fundamental doctrines, rest, as a matter of fact, upon inductions drawn from the "inner" life. (2) That religious experience ("inner experience") belongs entirely to psychology—"entirely" being used in the same sense as when it is claimed that the non-religious portions of conscious life belong entirely to science. (3) That since the gods of religion are empirical gods they belong to science."

To show the extent to which the basis of theological arguments has been removed from the outer world to the inner, our author presents us with nine exceedingly interesting documents, very typical of the present trend of the new theology, and demonstrating plainly that at least for the thinkers of the school here presented "belief in the Christian God rests no longer upon the wonders of the physical universe, nor upon metaphysical arguments, but upon certain inner experiences." This prefaced, he goes on to show that the data upon which this empirical argument for God is based belong entirely to the field with which the psychologist only is competent to deal. And there is no question how the psychologist must deal with them.

If the facts prove the conclusions of the theologians, they must do so either directly, by presenting the very realities in question such as God himself, etc., or indirectly by way of induction. That the experience of the mystic of or the convert is not an immediate presentation of God will be admitted by most theologians and cannot be maintained by any one who understands the difference between direct introspection and interpretation. Can we then prove the existence of God and the truth of the Christian doctrines by an induction from the facts? Not unless it can first be demonstrated that the facts in question are incapable of explanation on purely psychological principles. And as this can never be done, the argument of the theologians based on inner experience falls to the ground. From this the reader must not suppose that Professor Leuba is the foe of every form of religion or that he is holding a brief for naturalism. He is attacking here only one form of theology—the "empirical" variety—and vindicating the right of the psychologist to deal in his own way with all the facts of consciousness. His own philosophy, he assures us, is idealistic rather than naturalistic, and he believes in and hopes for "the Future of Religion"—to which, in fact, he devotes a whole chapter. And yet he is much too frank to leave the upholders of traditional Christianity under the impression that he is at peace with them. He would willingly believe in a spiritual and pantheistic power which men might contemplate and in that sense worship; but for a personal divinity toward whom one acts "anthropopathically" he has no place in his philosophy.

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DISCUSSION

LEFT-HANDEDNESS IN INFANCY

In a paper read at the last meeting of the American Psychological Association in Cleveland, Dec. 31, 1912, I made the statement: "The left-handedness of infancy is commonly enough observed but it is nevertheless quite generally disbelieved,—reasoned away by the very people who observed it." (Compare the abstract in PSYCHOLOGICAL BULLETIN, 1913, **10**, 52. I should have made one exception, for Professor George V. N. Dearborn in his *Moto-Sensory-Development* not only reports the left-handedness of an infant, but also recognizes the theoretical significance of this observation. His statements on page 31 were written at the same time when I wrote my similar statements in *Human Behavior*, page 177, neither of us knowing of the other's view in this matter.

Professor Dearborn calls my attention to the following fact which is also very significant. The number of muscle fibers in the sartorius has been counted and found to be as follows:

	Left	Right
New-born (L > R)	120,745	113,304
Adult (R > L)	136,406	142,118

Can any one still believe that the left-sidedness of the infant is merely a "habit" accidentally acquired and later lost again? The left-sidedness of the infant is in every respect of the same nature as the right-sidedness of the adult.

In this connection I should also like to make the following explanation, called forth by certain remarks in the discussion following the reading of my paper. By "infancy" I mean what the word literally means, namely, the period preceding speech. This is the time, varying in different children, of the first six or twelve months. I never made any statement, as some of my critics seemed to believe, about any left-handedness characteristic of "childhood," for I do not believe that there is any.

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THE MENTAL IMAGERY OF THE BLIND

At the last meeting of the American Psychological Association Miss Fernald reported the results of her tests of mental imagery on two blind university students. Her conclusion (PSYHCOLOGICAL BULLETIN, X., 63) was: "So far as these two subjects were concerned, therefore, it appears that a decided positive emphasis on tactual sensory experiences during adult life was not effective in stimulating tactual imagery for the subject who was able to translate these into visual terms, while the subject who had no such resource used tactual imagery with readiness and success." Last year I had occasion to apply the form board test to a number of totally blind children. The results are of interest in connection with those secured by Miss Fernald, although it must be remembered that we used different tests and that my subjects were entirely unpracticed.

In the form board test, the child first explored the board with his hands, examining every recess and handling its corresponding block. He was then given three trials at taking the blocks from a pile and putting them into their recesses. Each trial was timed and a record taken of the number of errors or attempts at fitting blocks into wrong recesses. The results for the shortest of the three trials were as follows:

	Number of Individuals.	Average Age.	Average Time in Seconds.	Average Number of Errors.
Blind from birth	31	13	69	4.3
Vision lost before the age of three	32	15	52	3.8
Vision lost after the age of three	22	14	39	1.4

The table shows that the three groups were not equally successful in performing the test. The averages for those blind from birth were 69 seconds and 4.3 errors; for those who had lost vision before the age of three, 52 seconds and 3.8 errors; and for those who had lost vision after the age of three, 39 seconds and 1.4 errors. In other words, those who had had no visual experience at all showed the least ability, and the longer a subject had retained his vision the more successful he was in the test. From this one may conclude that they were assisted by the experience gained during their seeing life; that is, the success of the second and the third groups was due to something that remained from their visual experience. My conclusions, therefore, are: (1) those who have had visual experience retain their visual imagery and are assisted by it in the interpretation of their tactile

impressions; and (2) tactual imagery, even in those who have no other resource, is not as effective as a combination of tactual and visual imagery. The first agrees with Miss Fernald's conclusion, but the second restricts it to some extent.

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MÁDAY, S. VON. *Psychologie des Pferdes und der Dressur.* Berlin: Paul Parey, 1912. Pp. ix + 349. M. 8 geb.

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CAMPBELL, P. A. *The Game of Mind. A Study in Psychological Disillusionment.* New York: Baker and Taylor Co., 1913. 75 cents.

PIAT, C. *La personne humaine.* Paris: Alcan, 1913. Pp. xv + 404.

LUQUET, G.-H. *Les dessins d'un enfant. Étude psychologique.* Paris: Alcan, 1913. Pp. xxvi + 262. Pl. 150.

HUG-HELLMUTH, H. VON. *Aus dem Seelenleben des Kindes. Eine psychoanalytische Studie.* Leipzig u. Wien: Franz Deuticke, 1913. Pp. xi + 170.

BINET, A., and SIMON, TH. *A Method of Measuring the Development of the Intelligence of Young Children.* 2d ed. (Trans. by Clara H. Town.) Chicago: Chicago Medical Book Co., 1913. Pp. 82.

The Modern Treatment of Nervous and Mental Diseases, Vol. I. By American and British authors. Edited by W. A. WHITE and S. E. JELLIFFE. Philadelphia and New York: Lea and Febiger, 1913. $6.00 net.

NOTES AND NEWS

Tenth Annual Conference of Experimental Psychologists.[1]—The annual Conference of Experimental Psychologists was held in the psychological laboratory of Fisk Hall, Wesleyan University, from Thursday afternoon to Saturday noon, April 10th to 12th. About

[1] This note has been kindly furnished by Professor W. V. Bingham.

thirty psychologists were present, representing twelve laboratories. The meeting was somewhat smaller, more intimate and informal than usual. The social features included a luncheon tendered by the University, a smoker in the laboratory, and a dinner at the hospitable home of Professor Dodge. The public was permitted to share in one event of the program, a most interesting address by Professor Münsterberg in which he gave an account of his recent investigation of the mind-reading of Beulah Miller.

As this meeting marked the completion of a decade since the first of these conferences was held, it was made the occasion for a survey of progress: in addition to the usual informal reports of current investigations, the directors of several of the leading laboratories gave résumés of what had been accomplished at their institutions during this ten-year period.

One session was devoted to the discussion of tests, their theory, value, and limitations; and one to current general problems, the most interesting of which seemed to be the practical problem as to the attitude the experimentalist should take toward the increasingly insistent appeals for applications of psychology to business, industry, vocational guidance, and so on. At this session also, a lively discussion was precipitated regarding the nature and limits of introspection. The hostility to an identification of psychology with "behaviorism" was surprisingly unanimous, possibly due in part to the inability of Professor Watson to be present to defend his recently announced position.

The equipment of the small Wesleyan laboratory was a continual source of interest and admiration to the visitors. Indeed, several of them expressed the desire that through some means, possibly through the appointment of an American Psychological Association committee on laboratory devices, clear and full published descriptions of such ingenious and valuable inventions as these of Professor Dodge, might be made available in convenient form, for the guidance of all laboratory workers.

The annual conference in the spring of 1914 will be held at Columbia University.

PROFESSOR OSWALD KÜLPE has definitely accepted the call to the University of Munich, and will occupy the chair formerly held by Th. Lipps. Means have been provided for the establishment of a psychological laboratory which will be opened in the fall.